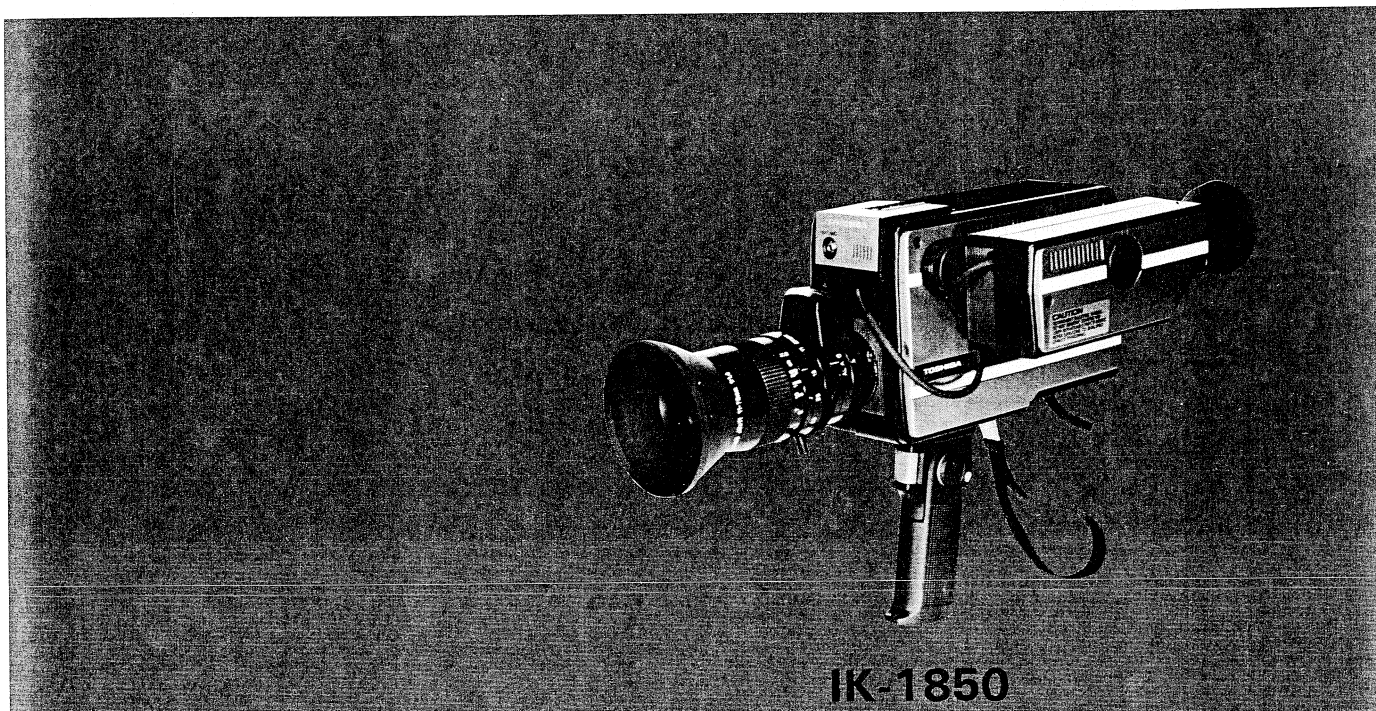
TOSHIBA

PORTABLE COLOR VIDEO CAMERA

IK-1850



IK-1850

SHOULD YOUR UNIT REQUIRE SERVICE,

PLEASE REFER TO "TOSHIBA SERVICE PROCEDURE" ON PAGE 15.

70941128D

Please read this manual throughly for optimum performance and enjoyment.
The operating instructions found herein are supplemented by a set of separately-bound quick-reference cards. Detailed instructions found in this booklet offer complete directions for connection, as well as detailed descriptions for the use of all viewer controls.
Record in the spaces provided below the Model and Serial Nos. as found at the rear of your video camera.

Model No._____ Serial No._____

Retain the information for future reference.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

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FEATURES

1. New Pickup Tube
   The IK-1850 is a single-tube color video camera which employs a newly developed Toshiba univicon as the pickup tube. It is a high-performance color video camera which is as free of color deviations and complex adjustments as possible, and is easy to operate.
2. Full Built-in Electronic Circuits
   The camera has full built-in electronic circuits so it can easily be combined with the portable VCR V-5530.
3. Small in Size, Light in Weight
   The camera can be hand-held because it is small in size and light in weight. Thus it offers a great degree of maneuverability.
4. Newly Developed LSI
   The LSI newly developed for color video cameras is used for improved reliability and stability.
5. C-Mount Lens
   The camera employs a standard C-mount lens, so various types of standard C-mount (suitable for 2/3 inch pickup tube) lenses generally commercialized for CCTV are available.
   The camera is equipped with the zoom lens of 6 times with the macro work as the standard option.
   The macro-mechanism is built-in for magnifying the picture range, and it offers the closest distance of up to 50 mm from the subject.
6. Viewfinder
   The electronic viewfinder has camera exposure, battery voltage warning, and VCR operation indicators. The electronic viewfinder permits monitoring of playback video from VCR.
7. Color Temperature Switch and its Control Knob
   Indoor or outdoor color temperature can easily be selected with the color temperature switch. And color temperature can be finely adjusted by the control knob.
8. White Balance Indicator System
   Color emitry of the camera may easily be monitored with the white balance indicator system and may be finely adjusted by using the white balance indicator lamp.
9. Built-in Microphone
   The built-in microphone picks up sound from the scene being shot. An external high-performance condenser microphone (VM-1610) can also be connected if desired.
10. VCR Remote Control Switch
    The portable VCR (V-5530) or any VCR with a special camera terminal can be started and stopped with the VCR remote control switch on the camera.

COMPOSITION OF IK-1850

1. MODEL IK-1850

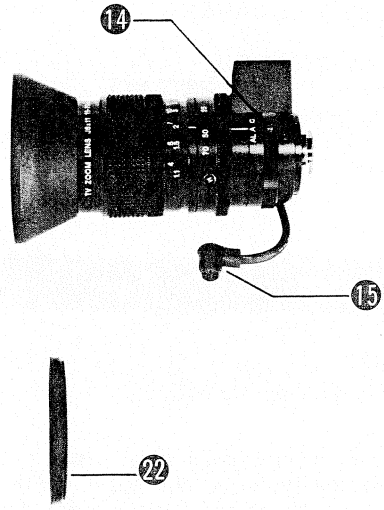
Color video camera	IK-1850	1
Electronic viewfinder	EVF-1850	1
Zoom lens (Auto-iris)	ZL6-110A3 F1.4 f = 11 ~ 70mm	1
Earphone		1
Amber filter	A-110	1
Operation manual		1

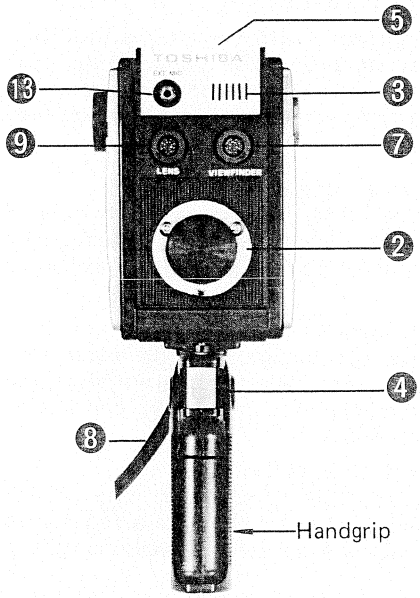
2. OPTIONAL ACCESSORIES
   - External Microphone VM-1610
   - Extension Cable (7.5 meter) EXC-1610
     Allows the distance between the camera and the VCR or AC adaptor to be extended up to 10 meters (33 ft.) by using this cable.
   - AC adaptor AC-1610 1
   - Remote control cable PR-10 1
   - ND Filter ND8 1
   - Video cable with pin type plugs 1
   - Audio cable with pin type plug and 3.5ϕmm mini-jack 1
   - DIN type video cable (D6P6L) 1
   - Convertion plug from 3.5ϕmm mini-jack to 6ϕmm jack (ADC-2) for VHS type VCR 1
   - Adaptor cable ADC-16 1

Those optional accessories can be ordered through your local TOSHIBA Field office or representative. Contact the above for further information.

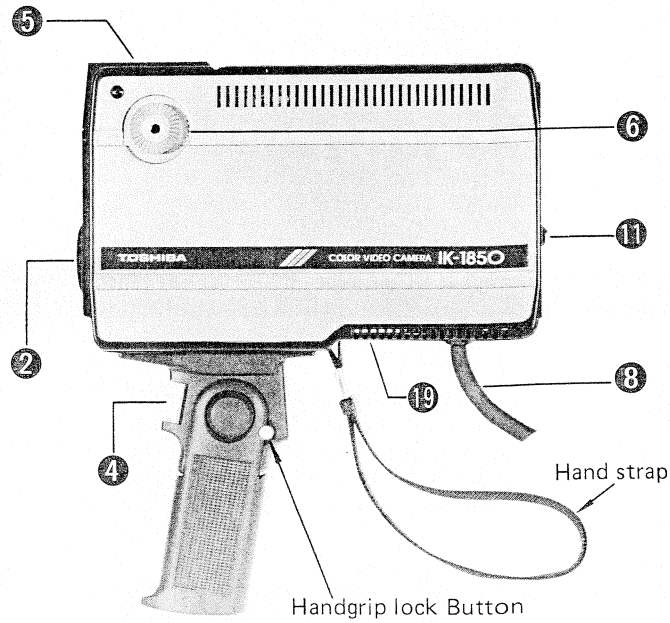
NAMES AND FUNCTIONS OF PARTS FOR IK-1850

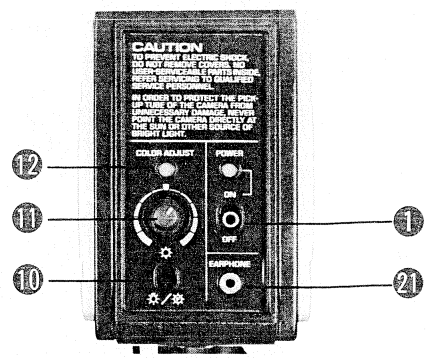
ZOOM LENS (AUTO IRIS)

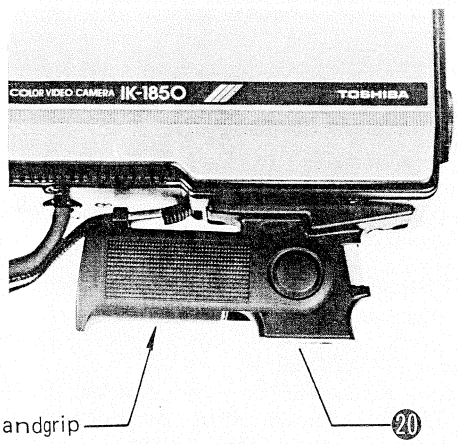




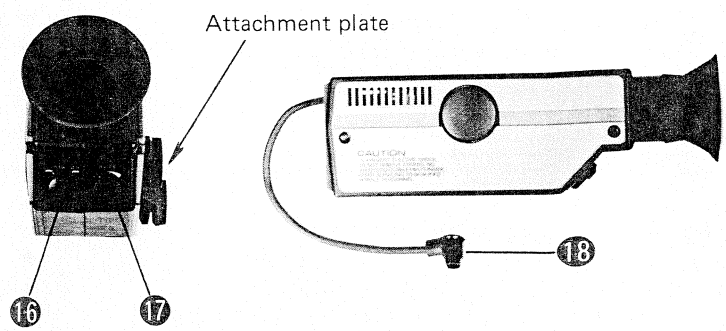
CAMERA HEAD







ELECTRONIC VIEWFINDER



❶ POWER ON/OFF Switch
When this switch is turned to ON, the pilot lamp lights, indicating that the camera is operating. When the switch is turned to OFF, the power to the camera is off.

❷ LENS Mount
Install the lens here, 2/3-inch C-mount type lens.

❸ Built-in MICROPHONE
Omnidirectional high sensitive condenser microphone.

❹ VCR Remote Control Switch
This permits tape start and stop when the camera is used with a VCR with a remote jack.

❺ ACCESSORY Shoe
For attaching the external microphone (VM-1610). A moving-light can also be mounted here.

❻ VIEWFINDER Mount
Install the electronic viewfinder here.
There are two viewfinder mounts on the both side of the camera, so you may choose either one at your convenience.

❼ VIEWFINDER Jack
Connect the cable of electronic viewfinder to the camera here.

❽ CAMERA Cable
Connect the camera cable to CAMERA terminal on the VCR (V-5530). In case of using a VCR other than the V-5530, connect the camera cable to the AC adaptor (AC-1610). The camera cable is 2.5 meters long, and can be extended up to 10 meters by connecting the extension cable (EXC-1610) which is an optional accessory.

❾ LENS Connector
Use this connector when the zoom lens is attached. This lens has MACRO work, so close up picture up to 50 m/m between the lens and the object is possible without any accessory by using the MACRO work.

❿ COLOR Temperature Switch
This switch compensates for the difference in color temperature. The ☼/☼ position is for incandescent light (3000°K), and the ☼ position for solar light (6000°K).

⓫ COLOR Adjust
This knob is used in combination with the color temperature switch ❿ . If the picture on the TV screen appears reddish, turn the knob clockwise to the blue zone so as to obtain a proper color. If the picture appears bluish, turn the knob counterclockwise to the red zone to obtain same as above.

⓬ White balance indicator lamp.
Use the indicator lamp when checking the white balance of the camera.
If the white balance indicator is turned on while taking the white object, adjust the COLOR ADJUST knob until the indicator lamp is turned off.

⓭ External MICROPHONE Jack
When using an external microphone, plug it into the EXT MIC jack.
This will deactivate the built-in microphone and allow the external microphone to become operable.

⓮ Auto-lock button
It allows to switch Auto/Manual aperture control by pushing the button.

⓯ LENS Plug
Connect this plug to LENS on the camera head.

⓰ CAMERA/VCR Switch
In the CAMERA position, the picture taken by the camera is monitored on the viewfinder. In the VCR position, you can watch the playback video from the VCR.
(For further details, see Page 6)

⓱ BRIGHTNESS Control
The brightness of the viewfinder can be adjusted by BRIGHT.

⓲ VIEWFINDER Plug
Connect this plug to VIEWFINDER on the camera head. The exposure indicator, battery voltage warning and VCR start/stop will then be supplied from the camera by this plug.

⓳ REMOTE CONTROL Jack
Connecting jack for the remote control cable.
(Optional accessory)

⓴ Attaching Screw for a Tripod
When attaching the camera to the tripod (optional accessory), use the screw.

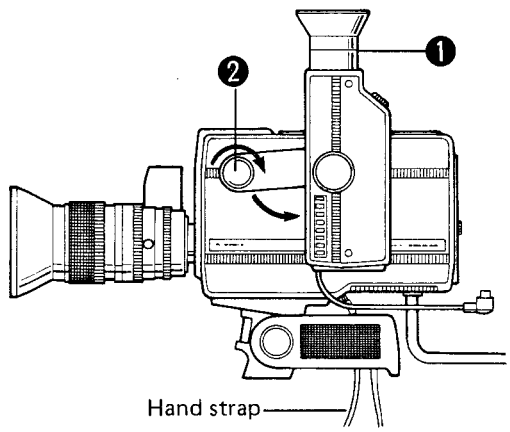
㉑ EARPHONE Jack
By connecting EARPHONE, the playback sound from VCR may be monitored.

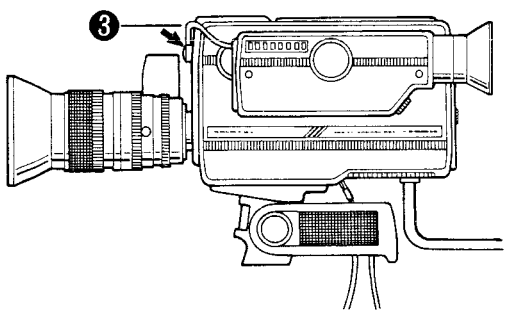
㉒ Amber filter
The filter is of the screw-in type and is mounted on the front frame of the lens when taking at the outdoor or under the illumination with high color temperature over 4500°K, it absorbs the blue rays of the light source and lowers the color temperature.

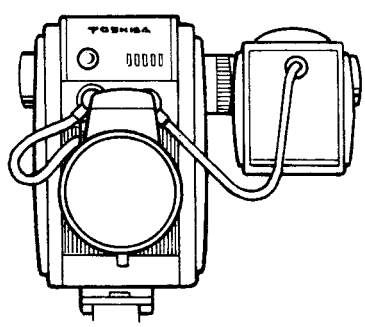
PREPARATION BEFORE USE OF IK-1850

Installing the viewfinder

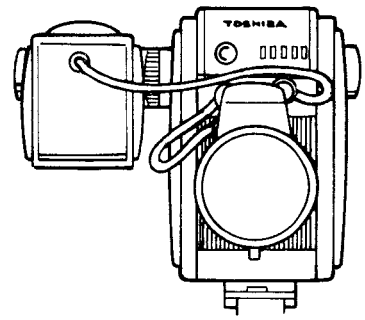
There are mounting screws both side of the camera and the viewfinder respectively, so you can use either one at your convenience. If your best eye is your right eye, put the attachment plate to the right side of the viewfinder facing to the eye-hood cap of the viewfinder by the screw, and put the attachement plate to the right side panel of the camera by putting the viewfinder in upright position for the attachment plate, as shown below, then tighten the screw.





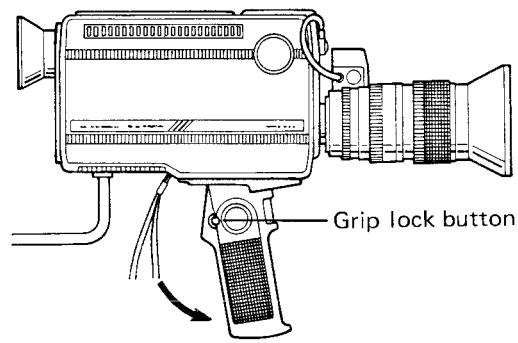


For the left eye, use the opposite side-screws for the above respectively.
Then, insert the viewfinder plug into the VF jack on the camera.



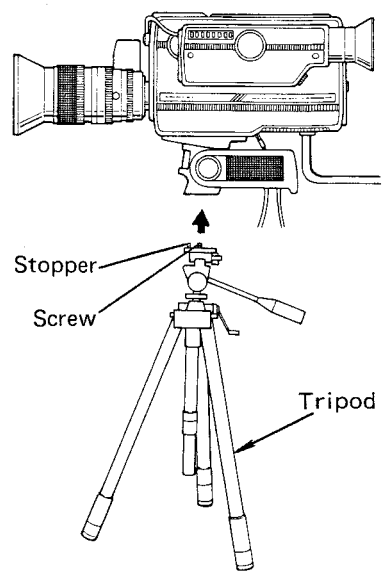
How to set the handgrip

Push the handgrip lock-button, and push over the end of the handgrip until a click is heard.



How to attach the camera to the tripod

Push the handgrip lock-button, and push it back until a click is heard. Then the screw for the tripod will come out, as shown in the figure.



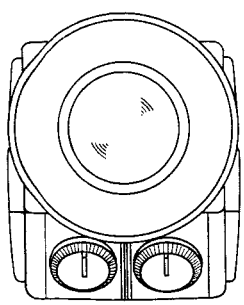
PRECAUTIONS

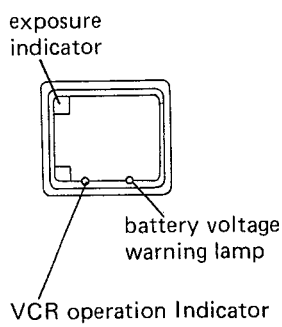
Remember the important points mentioned below when using your camera.

* Do not directly point your camera at the sun or intense flashes. As the pickup tube will be damaged. The operator must strictly observe this precaution since, damage to the highly sensitive camera pickup tube could be permanent.
* Avoid long exposure of the camera lens to an object with great difference in brightness. Otherwise, the pickup tube may be adversely affected.
* Avoid using the camera at places where corrosive gases, such as sulfurous acid gas are generated. Otherwise, the camera may develop problems.
* Use the camera under correct ambient temperature conditions. The camera may show color deviations or be adversely affected if it is used beyond the correct ambient temperature range.
  i.e. : Below 32°F (0°C) Over 104°F (40°C)
* When removing, installing, or changing the lens, exercise caution not to let dust enter the opening. Never touch the exposed face of the pickup tube and take care to avoid scratching the pickup tube.
* If the camera is left unused for a long time, the pickup tube performance will deteriorate. Switch on the camera and operate it at least once every six months.
* Do not leave the camera inside the car, nor at a place where it may be exposed to direct sunlight. Otherwise, the cabinet may get out of shape, or cause troubles.
* Handle the camera and its cable with care. Rough handling may result in problems.

VIEWFINDER AND THE FUNCTIONS

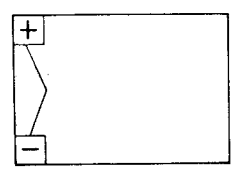
The electronic viewfinder has a 1.5 inch picture tube, so it permits direct viewing of the scenes picked up through the lens, and also you can playback the video recorded by VCR.
There are two knobs on the rear panel of the viewfinder. One of them is a VCR/CAM switch, another is a "BRIGHT" control for the picture tube.
When the VCR/CAM is in the CAM position it displays the picture from the camera.
When it is in the VCR position, it will display the playback video from the VCR.
Also you will be able to check the playback sound by the earphone, where the earphone jack is located on the rear panel of the camera.
Since the viewfinder unit has a magnifying lens with the eyehood over the picture tube, you may watch the magnified image through the lens.
Also, by using the tilting mechanism, you may select the viewing position you prefer.
(Note : This viewfinder displays a black and white picture only.)



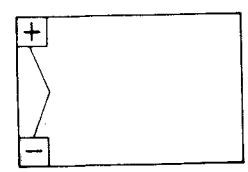


The electronic viewfinder also is equipped with the following indicator system.

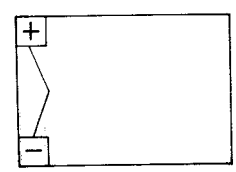
1. Exposure Indicator
   The viewfinder generates a pointer on the left side of the screen to indicate the exposure for the camera. The pointer drifts up or down according to the amount of light entering the lens and being seen by the camera.
   When the pointer is in the center of the blue zone, it shows that the light is best for a good picture. When the pointer displays upper (lower) of the red zone, it indicates that the exposure for the camera is over (under).



over exposure



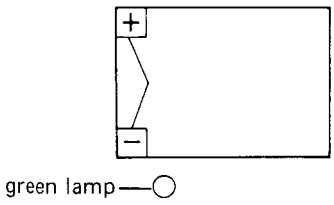
under exposure



optimum exposure

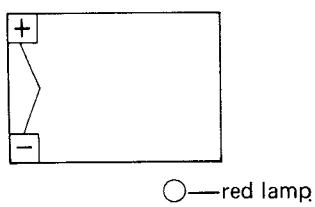
Exposure Indicator System

2. VCR operating indicator
When the green lamp is lit, it indicates that the VCR is operating. When the VCR is stopped, the green lamp is turned off.



VCR operating indicator

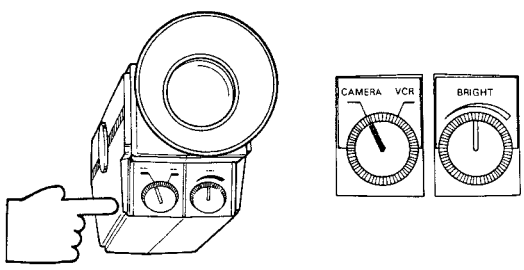
3. The battery voltage warning lamp
While the camera is operating normally, the lamp is not lit, indicating that the battery voltage is within the normal range.
If the battery voltage drops, the LED will be activated.
The red lamp indicates that the camera will not operate properly due to the low voltage.
When the LED lamp is on, replace the battery with another fully charged one, or use it again after recharging it.



Battery voltage warning lamp

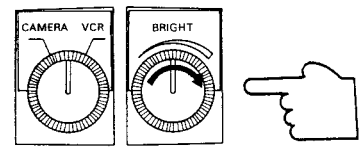
How to playback on the viewfinder

1. Set the CAMERA/VCR switch on the electronic viewfinder to CAMERA. If the camera is in use, its video may be seen on the screen of the viewfinder.



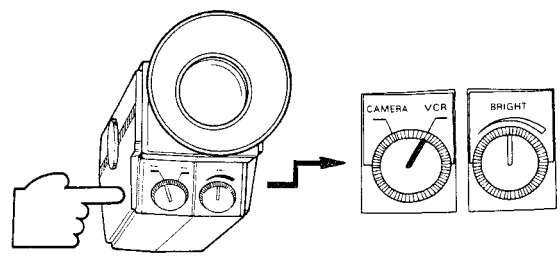
CAMERA/VCR Switch on the viewfinder

2. Adjust the brightness of the viewfinder to an appropriate level with "BRIGHT".

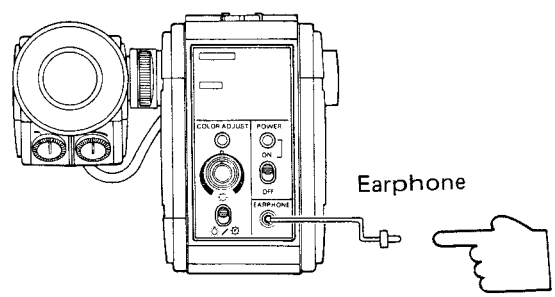


BRIGHTNESS Control

3. While watching the video in the viewfinder, adjust focus of the picture by rotating the focusing ring on the lens. Adjust the exposure by means of the aperture ring on the lens.
4. In case of playback, set the CAMERA/VCR on the viewfinder to VCR, and insert the earphone jack to the EARPHONE on the rear panel of the camera. Rewind the cassette in the VCR, and depress the play button. The playback video and the sound just recorded can be monitored with the viewfinder and the earphone.



CAMERA/VCR Switch on the viewfinder

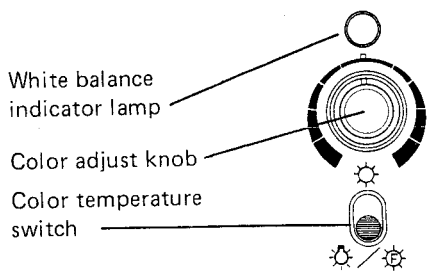


Rear panel of the camera

CAUTION
Be sure to keep this knob (CAMERA/VCR) in the CAMERA position while taking pictures.

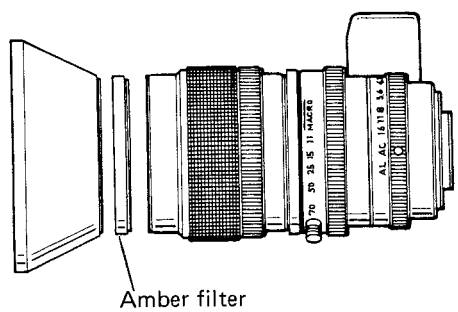
COLOR TEMPERATURE SWITCH AND COLOR ADJUST

The camera is equipped with a color temperature switch, a color adjustment knob and a white balance indicator lamp and included an amber type optical filter which absorbs the blue rays of the light source and lowers the color temperature.
Normally, set the color temperature switch at ☼ / ☼ position when using the camera indoor. Or when using the camera outdoor, mount the amber filter on the front frame of the zoom lens with remaining the color temperature at ☼ / ☼ position, or set the color temperature swtich at ☼ position without the amber filter.
When taking at the outdoor or under the illumination with high color temperature over 4500°K, use of the amber filter is recommended for better color rendition rather than the correction by ☼ position of the color temperature switch.
The white balance indicator lamp is located on the rear panel of the camera. If you want to check the white balance with the camera under the condition where operating, take a white object, such as white paper or white wall with the camera.
And, if the indicator lamp is turned off, adjust the "COLOR ADJUST" until the indicator lamp is turned on.



Rear panel of the camera

○ **OUTDOOR USE**
Fine day, in sunlight (5500° to 6000°K)
Mount the amber filter on the front frame of the zoom lens with remaining the color temperature switch at ☼/☼ position, and turn "COLOR ADJUST" to the center.

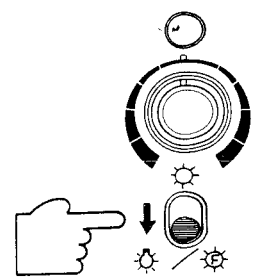


When not using the amber filter, set the color temperature switch at ☼ position.

Cloudy day, rainy day, summer beaches, skiing grounds, in sunlight (7000° to 8000°K)
Mount the amber filter on the front frame of the zoom lens with remaining the color temperature switch at ☼/☼ position, and turn "COLOR ADJUST" to the red zone.
When not using the amber filter, set the color temperature switch at ☼ position, and turn "COLOR ADJUST" to the red zone.

Morning or evening on fine day, in sunlight (4500°K)
Mount the amber filter on the front frame of the zoom lens with remaining the color temperature switch at ☼/☼ position, and turn "COLOR ADJUST" to the blue zone.

○ **INDOOR USE**
With halogen lamps or tungsten lamps (3000° to 3400°K)
Set the color temperature switch at ☼ / ☼ position, and turn "COLOR ADJUST" to the center.



○ Use a color TV set when adjusting the camera to the optimum color temperature. Adjust the hue control on the TV with a television program, pick up a white object with the camera, and watch the TV. If the picture appears reddish, turn "COLOR ADJUST" to the blue zone until the picture has the proper color. If the picture appears bluish, turn "COLOR ADJUST" to the red zone until it appears correct.

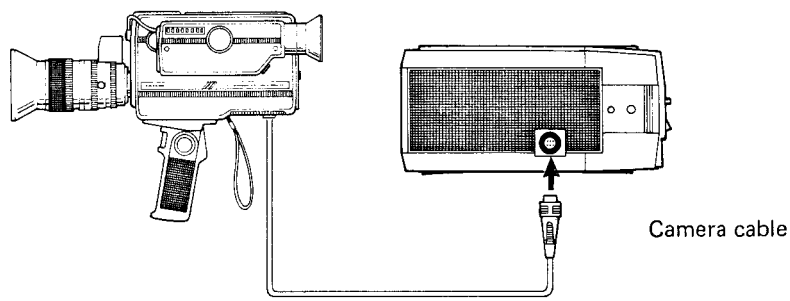
Note ;

Always use the automatic iris control work with the zoom lens and take a white object when checking the white balance with the camera.
If taking the white object by using the manual iris control work with the zoom lens, it will be made a mis-adjustment even if the indicator lamp is turned on.
Generally, the term "Color Temperature" is used as the word to represent the color of the light source.

CONNECTIONS

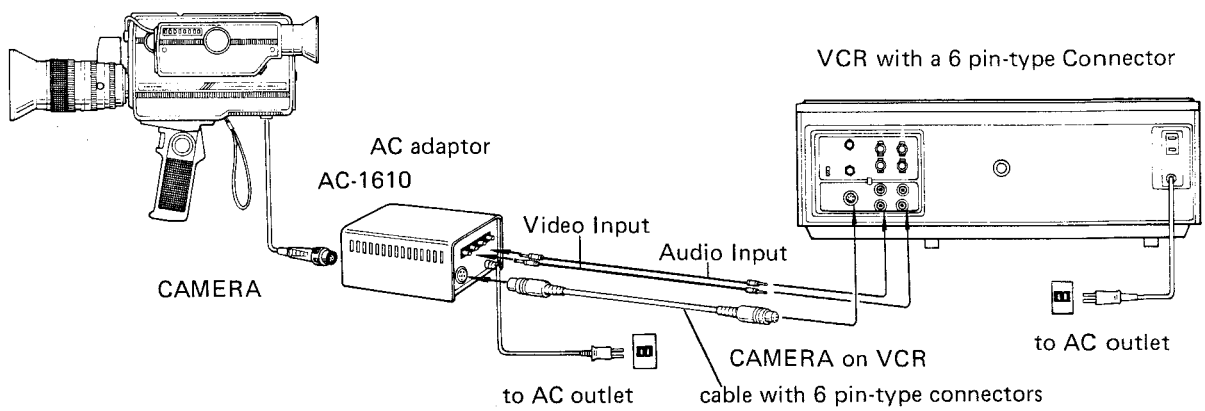
How to Connect the Camera Cable
Connect the camera cable plug to a portable VCR or AC adaptor. Hold the plug with the metal side up, and insert it until it clicks. When disconnecting the camera cable, hold the tip of the plug and pull the plug out of the jack. Do not pull out the cable itself because it could be damaged.

How to Connect to the Toshiba Portable VCR V-5530
Plug the camera cable directly into camera jack on VCR. The camera has now been connected to the VCR. The distance between the camera and the portable VCR can be extended up to 10 meters if the optional extension camera cable (EXC-1610) is available.



How to connect to the TOSHIBA Portable VCR V-5530

Connecting a VCR with a 6 pin-type connector to the camera.
1. Plug the cable from the camera into the jack on the AC adaptor.
2. Connect the VCR terminal on the AC adaptor to the camera terminal on the VCR by using the camera connecting cable with 6 pin-type connectors (D6P6L).
3. Connect the AC cords of the AC adaptor and the VCR to AC outlets. When monitoring playback video on the electronic viewfinder, connect the VIDEO INPUT terminal on the AC adaptor to the VIDEO OUTPUT terminal on the VCR with the video cable. A sound check can also be made by connecting the AUDIO INPUT terminal on the AC adaptor to the AUDIO OUTPUT terminal on the VCR with the audio cable.

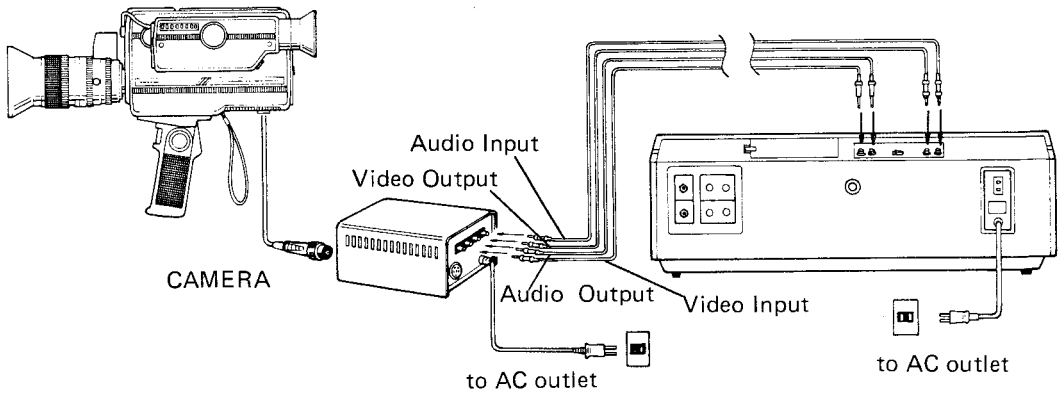


Connecting a VCR With a 6 pin-type Connector

How to Connect to Other VCR
Use the AC adaptor (AC-1610) when connecting the camera to a VCR other than the Toshiba portable VCR (V-5530).
1. Plug the cable from the camera to the CAMERA jack on the AC adaptor.
2. Use the video cable to connect the VIDEO OUTPUT terminal on the AC adaptor to the line VIDEO INPUT terminal on the VCR.
3. Use the audio calbe to connect the AUDIO OUTPUT

terminal on the AC adaptor to the AUDIO INPUT terminal (3.5 mmϕ mini jack) on the VCR.

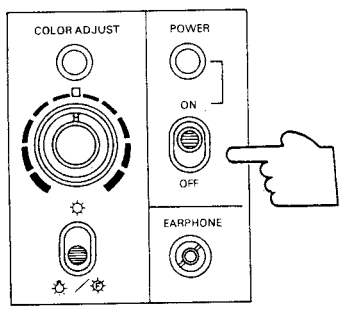
4. Insert the power plugs of the AC adaptor and the VCR into AC outlets. When monitoring playback video on the electronic viewfinder, connect the VIDEO INPUT terminal on the AC adaptor to the VIDEO OUTPUT terminal on the VCR with the video cable. For a sound check, connect between the AUDIO INPUT terminal on the AC adaptor and the AUDIO OUTPUT terminal on the VCR with the audio cable.



How to connect to other VCR

HOW TO USE THE CAMERA

1. First, place the POWER switch on the camera in the ON position. The pilot lamp will light, indicating that the camera is operating.

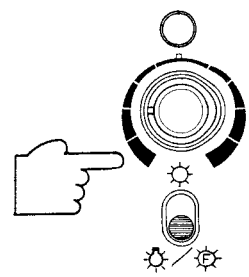


Rear panel of the camera

2. Remove the lens cap 1 or 2 minutes later, and select a suitable object.
   A good picture for practical purposes can be obtained in about 5 minutes.

3. Look into the viewfinder, and adjust the lens aperture. When the object is dark, open the aperture to admit more light. The picture quality of the color camera depends largely on the general lighting conditions.
   Carefully read the description of lighting on Page 13.

4. Set the color temperature switch as appropriate.
   In case of indoor lighting, set it at ☼ / ☼ position.
   In case of outdoor lighting or sunlight, use the amber filter or set the color temperature switch as ☼ position according to page 7.



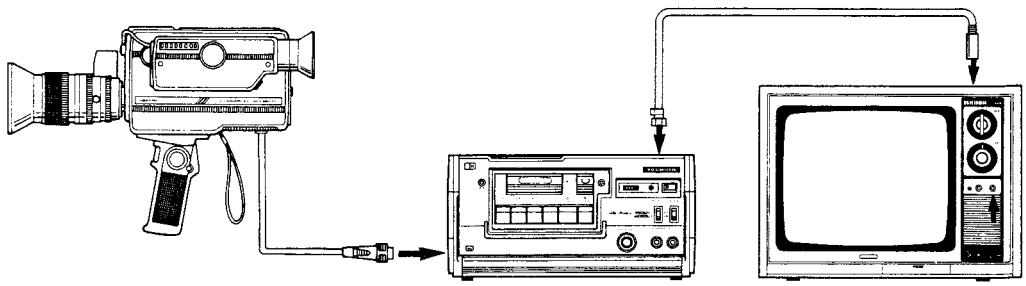
Rear panel of the camera

5. Turn "COLOR ADJUST" as appropriate.
   When the knob is in the center, it indicates 3000°K with the color temperature switch at ☼ / ☼ position or 6000°K with the switch at ☼ position.

The adjustment of the camera has now been completed.

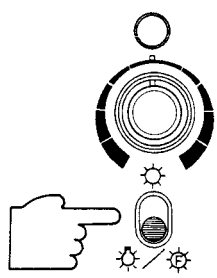
Use of the Camera in Combination with the Portable VCR (V-5530).

1. Place the POWER switch on the camera in the ON position. If a TV is available, also turn it on.
2. Load a cassette into the VCR, and depress the RECORD button. The picture taken by the camera will appear on the screen of the TV if everything is OK.



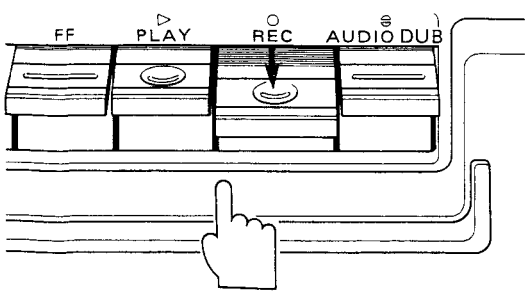
How to connect to the TOSHIBA Portable VCR V-5530

3. Turn "COLOR ADJUST" as appropriate. When the knob is in the center, it indicates 3000°K with the color temperature switch at ☼ / ☼ position or 6000°K with the switch at the ☼ position.

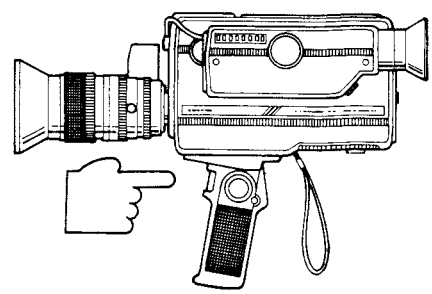


Rear panel of the camera

4. After adjusting the camera to obtain optimum picture quality, depress the RECORD and PLAY buttons simultaneously. The VCR now begins recording.



5. The VCR can be stopped any time by depressing the VCR remote control switch on the camera. Depress it again to start the VCR recording again. The hand-grip also provides VCR remote control switch, so you can choose either one at your convenience.



VCR Remote Control Switch

CAUTION

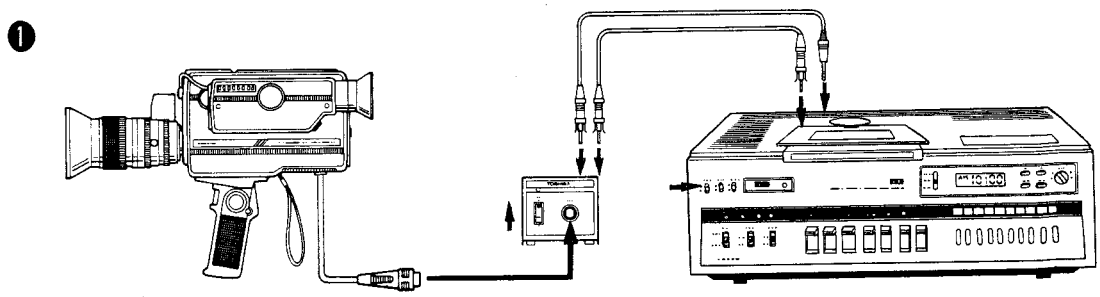
Do not keep the VCR out of operation (in the pause mode) for more than 5 minutes by depressing the VCR remote control switch on the camera.

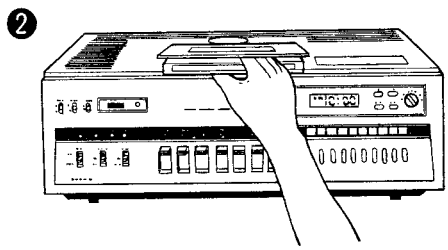
When the VCR will be out of operation (in the pause mode) for longer than 5 minutes, depress the STOP button on the VCR.

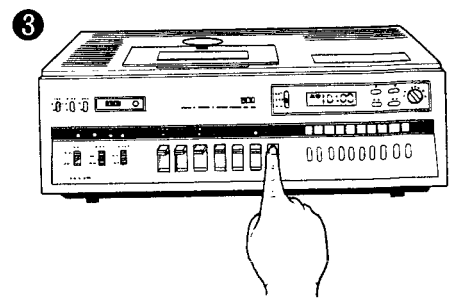
If the acoustic feedback (whistle-like sound) come out from the TV speaker, then keep the camera or micro-phone away from the TV or turn down the volume at the TV.

Use of the Camera in Combination with Other VCR's

1. Turn the power switches on the AC adaptor, camera, and VCR to the ON position.
2. Load a cassette into the VCR.
3. After adjusting the camera, depress the RECORD button on the VCR.
   The VCR will now begin recording.





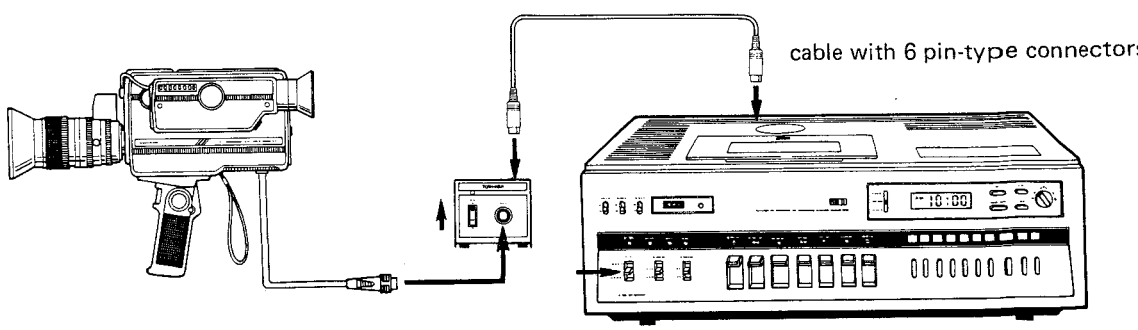


Use of the Camera in Combination with a VCR with 6 pin-type connector for camera signal.

1. Turn the power switches on the AC adaptor, camera, and VCR to the ON position.
2. Load a cassette into the VCR.
3. After adjusting the camera, depress the RECORD button on the VCR.
4. The VCR may be stopped any time by depressing the VCR remote control switch on the camera.
   Depress it again to start the VCR recording again.

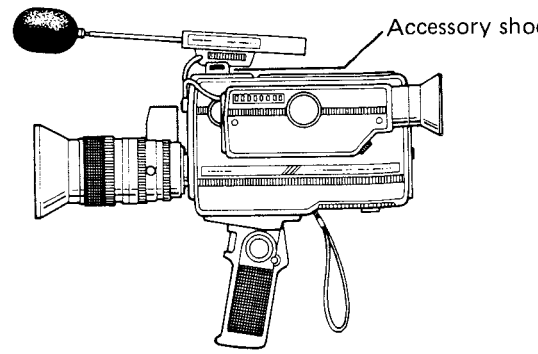
CAUTION

Do not keep the VCR out of operation (in the pause mode) for more than 5 minutes by depressing the VCR remote control switch on the camera.
When the VCR will be out of operation (in the pause mode) for longer than 5 minutes, depress the STOP button on the VCR.
If the acoustic feedback (whistle-like sound) come out from the TV speaker, then keep the camera or microphone away from the TV or turn down the volume at the TV.



How to Use External Microphone

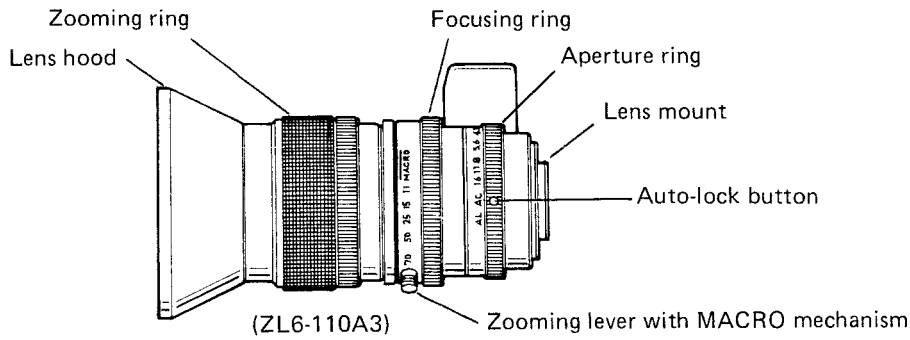
The camera has a built in omnidirectional microphone. If a unidirectional microphone is desired, use the optional condenser microphone (VM-1610). To install the condenser microphone, attach it into the accessory shoe on the top of the camera, and tighten the screw. Insert the microphone plug into the EXT MIC JACK on the camera. In this case, built-in microphone will not operate. If microphones other than the VM-1610 are desired, use a −65dB high impedance microphone. The microphone jack is required a mini-jack with a diameter of 3.5 mm.



CAUTION

If the acoustic feedback (whistle-like sound) come out from the TV speaker, then keep the camera or microphone away from the TV or turn down the volume at the TV.

LENS



Lens Aperture

There are some marks on the aperture ring except the number to note the lens aperture. Those marks indicates the following works with the lens aperture.

1 Auto-lock button : located on the aperture ring. It allows to switch Auto/Manual aperture control by pushing the button.

2 A : Automatic aperture control.
When setting "A" position, it automatically keeps the correct aperture at all focal length even though while zooming, so you can easily and automatically get clear, sharp, exact result.

3 AL : Aperture lock
When setting "AL" position, the lens aperture is locked the light value to be set at "A" previously. For example, while taking human face with A, when changing just the back ground illumination behind the face, and if you do not want to change the exposure for the face, set the aperture ring from A to AL.
In that case, the lens aperture on AL is locked the exposure to be set on A previously and if changing the background illumination behind the face, the exposure for the face is not drifted according to the background illumination.

4 C : Close
It represents "Close" of the lens aperture, therefore, when the lens aperture putting "C", no light does not get in the camera through the lens.
Put the lens aperture "C" in order to protect the vidicon tube while the camera does not operate.

MACRO Work

This lens is equipped with MACRO Work, so close-up picture of up to 50mm between the lens and the object is possible without any accessory.
There is a knob on the zooming ring of the lens, which is marked "M" on the top of the knob, that indicates "MACRO" work.
When you want to take a close-up picture of small

things such as a insect or something like that and want to enlarge it all over the TV screen, take the following procedure.

1. Put the object within 50 mm between the object and the lens.
2. Pull up the knob and rotate the zooming ring to "MACRO" until it clicks with pulling the knob.
3. Focus the object by adjusting the focusing ring on the lens.

For exchanging Lens

Use a 2/3-inch C-mount lens. Movie-camera lens for a C-mount can be also mounted, but are not suitable because the image will be shaded at the corners.

○ Precautions in the changing the lens

1. Be sure to set the POWER switch at OFF position before changing the lens.
2. Avoid sunlight when changing the lens outdoors.
3. Exercise great care not to let dust enter the opening take additional care not to scratch the face of the pickup tube while changing the lens.
4. Never touch the pickup tube with your hands.

Others

Use the neutral density filter ND8, optional accessary, under strong light conditions. It reduces light volume entering the lens to 1/8, but has absolutely no effect on color reproduction.

LIGHTING SUGGESTIONS

Light intensity and uniformity of illumination of the subject are most important in obtaining the best color. Illuminate not only the object but its background uniformly so that there will be as little shadow and difference in brightness as possible. This is the key to high quality image reproduction. It is suggested that the background wall be lighted separately from the object for better results.
The optimum illumination for the camera depends on the F number of the lens used. It requires about 300 lux (30 foot candle) when using the standard zoom lens of F 1.4.

Guide to Lighting

The required illumination of 500 to 2,000 lux for a standard zoom lens can be roughly obtained by placing one or two 500-watt lamps 2 to 3 meters away from the object.

CAUTION

If the camera lens is directly pointed at bright lights, such as the sun or lamps, or strong reflected lights from metal surfaces, the pickup tube will be burnt and permanently damaged. Put the lens cap on when not using the camera.

Lens F number	Optimum luminance
F1.4	300 lux (30 foot candles)
F1.8	500 lux (50 foot candles)
F2.8	1,200 lux (120 foot candles)
F4.0	2,500 lux (250 foot candles)

Illumination and Color Temperature

The color composition of light sources, such as the sun, incandescent and fluorescent lamps, is generally expressed by color temperature in degrees K (Kelvin). Even color films for ordinary photography come in daylight and tungsten light types, which are used differently depending on color temperature. In the color video camera, satisfactory color reproduction cannot be expected under different light sources. If a light source with low color temperature is used, the picture appears reddish. On the other hand, a light source with high color temperature tends to make the picture appear bluish. Although such difference is hardly noticed by the human eye, the camera directly reproduces the difference in color temperatures. Your newly purchased color video camera has the color temperature switch and "COLOR ADJUST" control to compensate for color temperature.

○ When using the camera under indoor lighting (color temperature 3000 to 3400°K), set the color temperature switch on the camera to the ☼/☼ position. If the color temperature switch is set in the ☼ position when the camera is used under illumination of 3000°K, the picture will appear reddish.

Set the color temperature switch at position.

Reddish (☼) **Normal** (☼/☼)

○ When using the camera outdoor (color temperature approx. 6000°K on a fine day in sunlight), attach the amber filter on the front frame of the lens with keeping the color temperature switch ☼/☼ position or set the color temperature switch at ☼ position. If the color temperature switch is at ☼/☼ without the amber filter, the picture will appear bluish.

Set the color temperature switch at ☼/☼ position and mount the amber filter on the front frame of the zoom lens.

Bluish (☼/☼ position without amber filter)
Normal (☼ or ☼/☼ position with amber filter)

○ **Fluorescent light**

The spectrum peculiar to fluorescent light makes the picture greenish. This can be corrected by using a color temperature-compensation filter (FL-W) for photography.

BEFORE CALL FOR ASSISTANCE

If your unit fails to operate, please check the following basic items, so that you may save yourself the cost of unnecessary service.

No power: pilot lamp does not light

- Make sure the AC cord is connected securely to A.C. outlet or battery.
- Remember the camera system has two power switches. Which are the A.C. adaptor and the camera when operated with the A.C. adaptor.

No picture

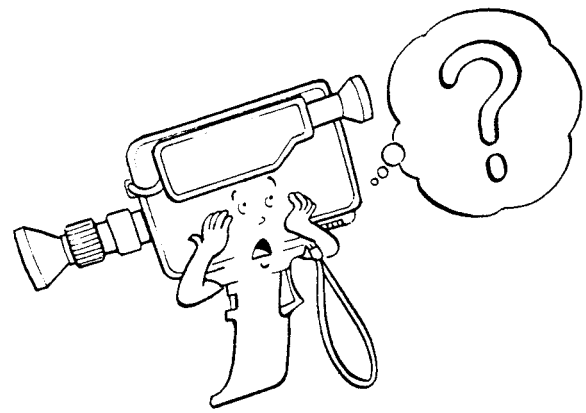
- Check that the connection between the equipment is correct.
- Make sure the lens is uncaped.
- When connecting it to the VCR, check that the input selection switch is in the LINE or CAMERA position.

Poor contrast

- Check that the illumination of the object is sufficient for the camera system.
- Make sure the lens aperture is open enough for the camera. If not, adjust it correctly while watching the exposure indicator in the viewfinder.
- Make sure the contrast knob of TV set is adjusted properly.

Poor color

- Check the color temperature switch and switch it to ☼ or ☼/ ☼ position according to the light source.
- Check that the knob for TINT of HUE on the TV set is adjusted correctly.



SPECIFICATIONS

System	Single tube frequency separation 2 carriers system
Pickup tube	E5331
Color system	NTSC compatible
Horizontal resolution	More than 260 lines
Luminance	10 foot-candles (F 1.4)
Video S/N	46dB (Luminance)
Audio S/N	More than 55 dB
Power consumption	7W (DC12V) EVF2.4W (DC12V)
Dimension	Camera head 3.5 x 7.8 x 8.5 inches (W/H/D) Electronic Viewfinder 2.4 x 2.7 x 8.3 inches (W/H/D)
Weight	Camera head 3.6lbs (w/o Lens and viewfinder) 3.6lbs Electronic Viewfinder 1.0lbs
Video output	VBS 1.0V(p-p), 75Ω
Audio output	−20dBs, 10kΩ
Video input (Playback)	VBS 1.0V(p-p), 75Ω
Audio input (Playback)	−5dBs, 10kΩ
Color temperature control	Selectable (Indoor-Outdoor) Adjustable
Indicators on the viewfinder	Exposure indicator VCR operating indicator Battery voltage warning
VCR Remote control	start-stop
Playback Video:	Watchable on the viewfinder screen
Audio:	Monitored by using the earphone
Lens	2/3" C-mount zoom lens F1.4, f11~70mm, Auto/manual-iris control

- The above specification are subject to change without notice for product improvement.

TOSHIBA SERVICE PROCEDURE

IN THE CONTINENTAL UNITED STATES · · ·
Should your unit require service, CALL

for the nearest TOSHIBA Authorized Service Station.
Please present your bill of sale to the Authorized Service Station when applying for warranty service. If service is not available in your local, you are to contact TOSHIBA Service Centers listed below for further information, or carefully pack the product (preferably in the original carton) and ship the product prepaid and insured to the most convenient TOSHIBA Service Center.

Toshiba America, Inc.
Service Center

82 Totowa Road
Wayne, New Jersey 07470
Phone Number:
(201) 628-8000

19500 South Vermont Ave.
Torrance, Cal. 90502
Phone Number:
(213) 538-9960
(213) 770-3300

3300 Royality Row
Irving, Texas 75062
Phone Number:
(214) 438-5814

2900 MacArthur Blvd.
Northbrook, Ill. 60062
Phone Number:
(312) 564-1200

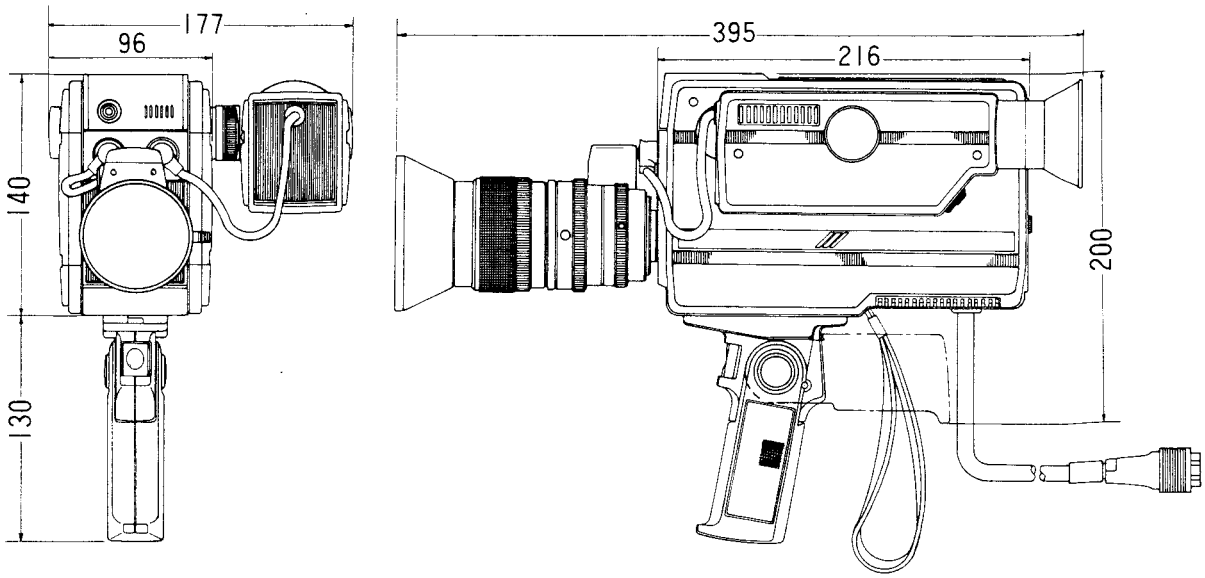
IN HAWAII · · ·

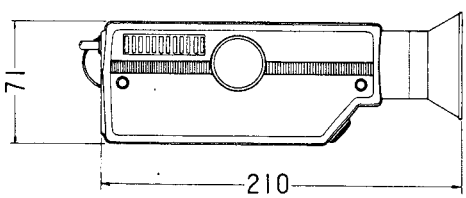
Toshiba Hawaii Inc.
Service Department
327 Kamakee Street,
Honolulu, Hawaii 96814
Phone Number:
(808) 521-5377

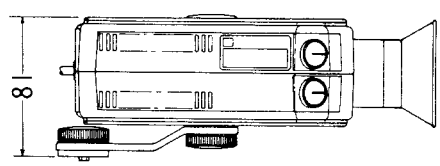
TOSHIBA

TA-TFN/81 Printed in Japan Oct. '81

DIMENSIONS







Unit : mm